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***DEVELOPMENT ECONOMICS***



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# **SOCIALLY DISADVANTAGED GROUPS AND MICROFINANCE IN INDIA**

## **Abstract**

In this paper we provide an empirical analysis of the social composition and performance of microfinance groups, known as Self-Help Groups, based on an original census we carried out in a poor area of Northern India. We examine whether traditionally disadvantaged villagers, such as scheduled tribes and landless farmers, are as likely to draw benefits from these SHGs as other villagers. While the initial participation in the groups closely reflects the social composition of the village, we find evidence of a selective attrition process against scheduled tribes who are less likely to remain members. Their expected access to bank loans - which is the primary aim of those groups - is also much more limited. By contrast, landless farmers are over-represented in these groups. As a result, even though they are more likely to leave the groups, they tend to benefit disproportionately from the SHGs. In expected terms, they receive more than two times the amount of bank loans given to other farmers. Overall, the program has therefore non trivial but important distributional implications.

JEL Classification: G21 and O1

Keywords: India, microfinance, selective attrition and self-help groups

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# 1 Introduction

The dominant model in Indian microfinance emerged in the early nineties when the Reserve Bank of India issued guidelines to all nationalized commercial banks encouraging them to lend to informal groups which came to be called Self-Help Groups (SHGs). In contrast to more traditional microfinance institutions, these groups do not follow a pre-defined model determining membership, rules for savings and lending, or their relations to banks and other institutions. Over the years, the creation of such groups has been actively promoted by the government and non-government agencies and the National Bank for Agriculture and Rural Development (NABARD) has provided banks with subsidized credit for SHG lending.<sup>1</sup>

SHGs are the most important source of microfinance in India both in terms of outreach and total loan disbursements. By March 2014, over 7.4 million SHGs covered about 97 million rural households (NABARD, 2015). The success of SHGs resulted from the combined presence of a vibrant non-government sector engaged in rural development and an extensive but unprofitable network of rural banks and agricultural cooperatives that were created with the explicit purpose of providing small loans to the rural poor. Over the years, SHGs started managing some important social programs of the Indian government, such as the distribution of food grains and the preparation of school meals in state primary schools.<sup>2</sup> Furthermore, SHGs members are also actively engaged in community affairs and collective action in the village (see Desai and Joshi, 2014 and Casini et al., 2015).

This paper reports findings from an exhaustive study of 1,521 SHGs with a total of 21,974 women members in selected regions of rural Northern India. The groups were formed during the period 1998-2007 by PRADAN, a non-government organization working in these areas. Entry into the groups is voluntary. The extent of the coverage offered by the program is impressive, as about 38% of the households in the villages have a member participating in an SHG. However, the performance of the groups and their members vary. Overall, 8.7% of all groups created over this period are no longer active and 12% of the members left their group while it was still functioning. As a result, about 20% of the members who joined a group initially left the SHG network. Groups also differ in their access to bank loans, which is the major motive behind their creation. Thus, about 30% of the groups do not have a bank loan.

Most of the literature focusses on the impact or the appropriate design of microfinance institutions (see Banerjee (2013) for an overview).<sup>3</sup> However, we are interested in the factors underlying these measures of performance. In particular, we focus on two groups of villagers that are traditionally at a disadvantage in terms

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<sup>1</sup>See Reserve Bank of India (1991) and NABARD (1992) for the original policy statements.

<sup>2</sup>A detailed discussion of microfinance institutions in India is provided in Baland et al. (2008).

<sup>3</sup>For the impact of SHGs in India, see Casini et al., 2015; Datta, 2015; Deininger and Liu, 2012; Deininger and Liu, 2013; Desai and Joshi, 2014; and Khanna et al., 2015.

of village life and economic activities. The first of these consists in the lower caste groups, the scheduled tribes and the scheduled castes, who lie at the bottom of the social hierarchy (for a detailed discussion, see Pande, 2003). Landless households are the second disadvantaged group we focus on. Given that these villages are predominantly rural, landlessness remains a critical determinant of poverty and economic exclusion. We examine to what extent being landless or of a lower caste group matters for participating actively to these groups and drawing benefits from them. Given that we carried out an exhaustive census of all groups that were created in these areas over a long period of time, we are able to investigate processes of selective attrition, whereby some groups or some villagers are systematically more likely to leave the existing microfinance structures. To our knowledge, this is the first study documenting such processes in microfinance.

In terms of participation into the groups, we find that membership into groups closely reflects the social composition of the village they originate from. However, within the same community, groups are very fragmented, reflecting a selective process of sorting across groups in the village. On average, about half of the members should change groups within the same village for the groups to be similar in their social or landownership composition. We also find that groups composed of scheduled tribe members are less likely to survive and obtain bank loans unless they also include members of higher castes. However, these socially mixed groups also display larger departure rates by lower castes members. By contrast, landless villagers are much more likely to participate to groups than other villagers and, even though they also tend to fail and leave more often, they still remain over-represented in the surviving groups. Within groups, we find no differences in terms of access to bank loans. Combined together, the attrition process is such that scheduled tribes are particularly disadvantaged in terms of participation and access to bank loans. By contrast, the overall impact of these groups is, if anything, biased in favor of landless farmers. As a whole, these programs have therefore non trivial distributional implications.

We provide a description of our survey data in Section 2. In Section 3, we analyze the composition of the groups in terms of castes and landownership. Section 4 analyzes the process of survival of groups and members, using duration models. Section 5 analyzes the determinants of their financial performance in terms of access to bank loans. A brief section concludes.

## 2 The survey

Our data is based on surveys of SHGs created by PRADAN (Professional Assistance for Development Action), one of the earliest NGOs in the Indian microfinance sector. The NGO is active in 44 districts, spread over 8 states. It aims to promote and strengthen the livelihoods of socio-economically disadvantaged communities. The

SHG program operates by first targeting administrative blocks with high levels of rural poverty within particular districts. The groups themselves consist entirely of women and follow the guidelines issued by NABARD and the Reserve Bank of India. PRADAN professionals begin the process of group formation by calling a meeting in some public space in the village. They discuss the benefits of membership and some general principles followed by successful groups (compulsory attendance, weekly savings, typical interest rates, bookkeeping). Interested women are enlisted, a regular meeting time is set and the professional is usually present at meetings until membership becomes fairly stable and all members are familiar with group practices.

Each group is provided with a register for keeping accounts and a cash box, and either designates one of the members to keep accounts or hires an accountant. The register, cash box and keys are usually rotated across the members. Smoothly functioning groups typically open a savings account with a nearby commercial bank within a year of their inception. After this stage, PRADAN professionals discuss possible self-employment projects with the group, some members decide on particular projects and the group then applies to a commercial bank for a loan. This loan constitutes their first bank linkage. Bank funds usually come into the group which then lends to individual members at interest rates determined by the group. Payments are made to the group which then repays the bank on the stipulated date.

As the group gains confidence and shows that it can manage its functioning independently, PRADAN professionals gradually withdraw and their direct interactions with group members increasingly take place on occasions when they visit the village to initiate other livelihood projects.

We ran a census of all the 1,521 SHGs created by PRADAN in five of its field locations, two in northern Odisha, one in central Chhattisgarh and two in northern Jharkhand. These groups were all created from 1998 onwards. Running a census was particularly appropriate as we focus on groups' disappearance and members' departure, which a traditional random survey is more likely to miss. The observations therefore included every group that has been formed since 1998 in these areas. In addition to group level data, we collected information on the backgrounds and SHG activities of 21,974 women who, at any stage, had been members of these groups.<sup>4</sup> The records kept by the group helped in the process as they systematically mention the entry and exit dates of their members. In the present paper, we focus on members who join the group at the time of its creation.<sup>5</sup>

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<sup>4</sup>We miss information on 13 groups and 63 members for which we do not have some critical information. In particular, two groups refused to participate in the survey.

<sup>5</sup>We thereby ignore members who join the groups later, for whom the processes of membership and departure may not be directly comparable. Our results are virtually unchanged when they are included in the analysis.

## 3 Group composition

### 3.1 Group composition at the village level

We first examine the composition of the groups, focusing on the caste and land status of their members. The caste status we consider here is defined by the three main categories of castes: scheduled tribes (ST), scheduled castes (SC) and other backward castes (OBC/Other).<sup>6</sup> These categories are hierarchically organized, with the ST and SC at the bottom and the OBC/Other at the top of the social ladder.

Another possible source of bias in the composition of groups is related to wealth. Given that these villages are all located in remote rural areas, where the major occupation is farming, we also looked at the landownership status of group members. In particular, landless households are vulnerable, as they mostly rely on casual labour as their main occupation.<sup>7</sup> Unfortunately, the information available to us at the village level is rather coarse, as landownership in the village surveys was defined in terms of categories instead of actual land size.

The caste composition in the surveyed villages and the groups within those villages is given in Panel A of Table 1.<sup>8</sup> Panel B reports the composition of groups and villages in terms of land ownership. The first two columns report the caste and land status composition of households and group members in all the villages. As villages vary in terms of the number of castes they have, we also report in the last two columns the composition of households and groups in villages that have at least 20% of two castes.

Overall, the composition of the groups in terms of castes reflects their distribution in the total population. STs are slightly under-represented in the groups, but this is essentially due to a placement bias as more SHGs tend to be created in villages where tribal households are less present.<sup>9</sup> It appears that, within the same village, the caste composition of the groups is unbiased. In terms of land ownership, the initial composition of the group strongly favors landless households who are twice

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<sup>6</sup>As is well known, within each of these categories, there are a large number of different sub-castes and tribes. We grouped in the latter category OBC as well as some higher ranking castes (the *forward castes*) which represent a very small fraction of the population in our villages (less than 3 percent). Moreover, some mobility across categories has been observed in the past, whereby some tribes and sub-castes succeeded in moving upwards in the social hierarchy (for more details, see, e.g., Somanathan, 2007; and Cassan, 2015).

<sup>7</sup>Among landless households, only 5.8% declare themselves as farmers. Their main occupation is casual labour (52.1%), housewives (29.5%) and traditional handicraft (7.0%). Only 2.6% of them have a permanent salaried position. For non-landless households, the main occupations are farming (26.1%), casual labour (29.1%), housewives (32.32%), traditional handicraft (7.0%) and permanent salaried position (2.3%). They are also more educated, as the correlation between landownership and education is positive and equal to 0.125.

<sup>8</sup>We report here group composition at the time of their creation.

<sup>9</sup>The average participation rate in all villages is equal to 38% but falls to 35% in villages in which STs exist.

Table 1: Caste and land composition of the households and groups

	All villages		Villages with at least 20% of two castes	
	Share of households in village (%)	Share of members in groups (%)	Share of households in village (%)	Share of members in groups (%)
<b>Panel A: Caste category</b>				
ST	38.9	36.5	33.7	30.9
SC	15.9	16.8	19.5	21.5
OBC/Other	45.2	46.7	46.8	47.6
<b>Panel B: Land ownership category</b>				
Landless	12.1	20.3	13.4	24.1
$0 < \text{acre} \leq 1$	40.0	46.6	39.2	44.0
$1 < \text{acre} \leq 2$	22.7	15.2	21.5	14.1
$> 2$ acres	25.2	17.9	25.9	17.8
Observations	57,345	21,974	38,409	14,484

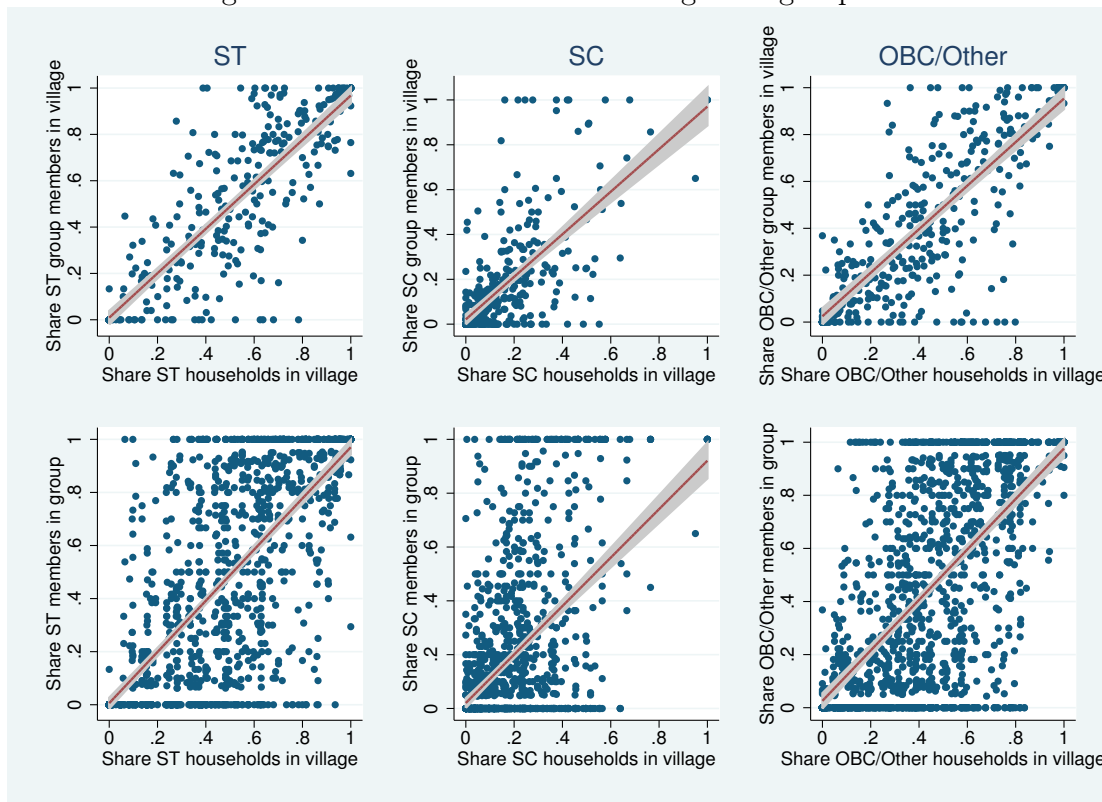
more likely than wealthier households to be members. Group membership decreases with the amount of land owned. These results do not control for household and village level variables that may influence membership. A natural approach would have been to investigate group membership as a function of household characteristics using village fixed effects. Unfortunately, our data do not allow us to do this, as we do not have the required information for the households in the village that are not member of a group. At the village level, we only know the share of households endowed with a particular characteristic (caste and land ownership category).

### 3.2 Group composition at the group level

We now examine the composition of the groups within villages, as 81.7% of the villages exhibit more than one group, and some sorting process may take place between groups within the same village. In order to explore this, Figure 1 reports the relation between the caste composition of groups and the villages within which they were created. In the top panel of the figure, we summarize this information at the village level, using the caste composition across all existing groups in a village (386 observations). On the horizontal axis, we report the share of a particular caste in the village population. On the vertical axis, we measure the share of SHGs members of a particular caste in the village. In the bottom panel, we report the information for each group separately, so that we measure on the vertical axis the percentage of members of a given caste who are members of a particular group (1,521



Figure 1: Caste selection at the village and group level



observations).

The contrast between the two sets of figures is particularly striking. The top panel of Figure 1 replicates our previous section: within a village, on average, there is no selection of members based on their caste. The bottom panel indicates a lot of heterogeneity across groups within the same village, as reflected by the much larger dispersion in the observations. We also observe a large number of homogenous groups, as evidenced by the accumulation of points at 1. (They represent 41.1% of our sample.) This shows that, while groups are on average representative of the caste composition within their community, group composition varies a lot within the same village. We carried out a similar exercise in terms of land ownership but do not report the figures here. We also find a lot of heterogeneity across groups within the same village but a much smaller number of homogenous groups in terms of land status.

To further illustrate the importance of sorting across groups based on caste identity and landownership, we first compare caste fragmentation within groups with that in the village. The fragmentation index used is the usual one and measures the probability that two randomly drawn members of the same set (group or village)

belong to a different caste. For our measure to be meaningful, we restrict ourselves to villages where more than one group has been created, which represent 1,445 groups in 310 villages. We also compute the same measure for land ownership categories. The results are reported in Table 2. In terms of castes, the fragmentation index over the village population is much larger than among group members. SHGs are therefore much more homogenous in terms of their social composition. The same phenomenon is also observed for land categories.

Table 2: Fragmentation of caste and land at the group and at the village level

	Caste category		Land ownership category	
	At village level	At group level	At village level	At group level
Fragmentation Index	0.34 (0.21)	0.21 (0.22)	0.55 (0.16)	0.43 (0.22)
Observations	310	1,445	310	1,445

Standard deviations are given in parentheses.

An alternative measure to capture this phenomenon is the dissimilarity index, which is based on the dis-proportionality of different castes across groups. We first compute dissimilarity at the village level which measures the difference between the relative share of a particular caste and the relative shares of the other castes for each group in a particular village:

$$D_{jv} = \frac{1}{2} \sum_i \left| \frac{P_{ijv}}{P_{jv}} - \frac{P_{ikv}}{P_{kv}} \right|$$

where  $P_{ijv}$  is the number of members of caste  $j$  in group  $i$  in village  $v$ ,  $P_{ikv}$  is the number of members of caste  $k$ , with  $k \neq j$ , in group  $i$  in village  $v$ ,  $P_{jv} = \sum_i P_{ijv}$  and  $P_{kv} = \sum_i P_{ikv}$ ,  $k \neq j$ . This measure can be interpreted as the percentage of group members of a particular caste that have to be changed across groups within a village so that their shares in each group is identical. The same measure is also constructed for land categories.

Across villages, one can then define the caste-wise dissimilarity index,  $D_j$ , which is the population-weighted average across villages of the same measure:

$$D_j = \frac{1}{\sum_v P_{jv}} \sum_v P_{jv} D_{jv}$$

$D_j$  therefore represents, on average across all villages, the proportion of members of a particular caste or land category who should change groups for their members to

be uniformly represented in all groups of the same village. These measures, while relatively unfamiliar to economists (for some exceptions and alternative measures, see Echenique and Fryer, 2007; and Sethi and Somanathan, 2009), have been used extensively in social sciences, for instance to measure the extent of racial segregation across neighborhoods in American cities (see in particular Duncan and Duncan, 1955; Cortese et al., 1976; and the discussions in Reardon and Firebaugh, 2002; and Alonso-Villar and del Río, 2010). Table 3 reports the dissimilarity index for each caste and land group.

Table 3: Segregation indices of castes and land across groups

<b>Caste category</b>		<b>Land ownership category</b>	
Dissimilarity index ST	0.54	Dissimilarity index landless	0.49
Dissimilarity index SC	0.63	Dissimilarity index $0 < \text{acre} \leq 1$	0.44
Dissimilarity index OBC/Other	0.53	Dissimilarity index $1 < \text{acre} \leq 2$	0.40
		Dissimilarity index $> 2$ acres	0.46
Observations	310	Observations	310

The measured indices are very large as a substantial proportion of members should be exchanged across groups within the same village to achieve a proportional representation of each caste or land category in those groups: on average, about half of the members should change groups within the village.<sup>10</sup> This reflects the fact that groups are much more homogenous in terms of caste and landownership than the population of group members in a village.

## 4 Group and member duration

### 4.1 Descriptive statistics about group failure and member departure

In the preceding section, we highlighted the fact that, within the same village, the composition of SHGs varies a lot in terms of caste and landownership. Potential members tend to sort themselves across groups, and are therefore more likely to belong to a group composed of members of the same caste or landownership category. We also saw that membership in groups, if anything, tends to be biased in favor of villagers with no or little landholding.

<sup>10</sup>The figures obtained are very similar to those obtained for the indices relative to African-American residential or school segregation (see e.g. Cortese et al., 1976; and Sparks et al., 2013).

These observations naturally lead to the following questions. First, given that some groups disappear, is the survival of the group related to its composition in terms of castes and landownership? Second, are some members more likely to leave groups while others are more likely to stay? In other words, is the process of disappearance of some groups and some members selective? Third, to what extent are the achievements of the groups and their members related to their characteristics in terms of caste, landownership and other relevant characteristics? We focus on the two first issues in this section and address the third question in Section 5.

In the following, we describe a group as *inactive* if the group does not have any more meetings at present and declares that they have no plans to meet in the future. A group is considered as *active* if they held meetings at the time of the survey or intended to meet in the future. A member is described as *past* if she abandoned a group which is still active, or if she left an inactive group before the last meeting. A member is called *present* if she still participates in an active group or if she belonged to an inactive group up to its last meeting day. We first present some descriptive statistics on departure rates by caste and landownership status in Table 4. For each individual of a particular caste or land category, we compute the probability that the group she belongs to fails, that she leaves an existing group and, finally, that she remains a member of a group.

Table 4: Attrition rate by caste and landownership status

	Number of members	Leaving because of group failure	Leaving existing group	Remains in group
ST	8,022	11.0	14.6	74.3
SC	3,690	7.0	12.9	80.1
OBC/Other	10,262	4.7	10.0	85.3
Landless	4,464	8.7	15.1	76.2
$0 < \text{acre} \leq 1$	10,253	5.9	10.7	83.5
$1 < \text{acre} \leq 2$	3,331	7.8	12.5	79.7
$> 2$ acres	3,926	9.4	12.6	78.0
All	21,974	7.4	12.2	80.4

Three interesting patterns emerge from these figures. First, on average, 12.2% of the members leave an existing group, while 7.4% of the members belonged to a group which failed. Second, group failures are more frequent among STs than in the other two caste categories. ST and SC members are also more likely to leave groups. Overall, the probability that a member stays in a group that remains active is 74% for STs, as against 80% for SCs and 85% for the OBC/Other castes. Third, group

failure and member’s departure is larger among landless villagers and, to a lower extent, large landowners. As a result, the initial advantage of landless villagers in their access to groups gets eroded by higher group failure and departure rates, so that ultimately, the chance that a landless member remains in an existing group is equal to 76% as compared to an average of 82% for the other land categories.

We provide descriptive statistics on the groups by survival status in Table 5 and on present and past members in Table 6. A comparison of the two types of groups shows some interesting patterns. First, active and inactive groups are both reasonably long-lived, with inactive groups operating for an average of 2.4 years after they are formed.<sup>11</sup> Second, homogenous ST groups have a lower survival rate: while 15.5% of the active groups are homogenous ST, they represent 27.1% of the inactive groups. The opposite holds for homogenous OBC/Other groups. Finally, members of active groups are, on average, more educated. There is no difference in group size and in landlessness. Table 6 compares present and past members. As already noted, STs and landless members are more likely to leave groups. The demographic characteristics of past and present members are otherwise roughly similar.

## 4.2 Group duration

In this section, we investigate the determinants of the time taken till a group becomes inactive or a member leaves a group with a survival analysis based on the Weibull model (see e.g. Klein and Moeschberger, 2003).<sup>12</sup> The hazard function is given by:

$$\begin{aligned} h(t|x_j) &= h_0(t) \exp(x_j\beta_x) \\ &= \alpha t^{\alpha-1} \exp(\beta_0 + x_j\beta_x) \end{aligned}$$

In this model, the baseline hazard rate  $h_0(t)$  is restricted to vary monotonically over time, but can be either increasing, decreasing or constant, depending on the value of the parameter  $\alpha$ . In the tables, we report the exponentiated coefficients, which represent the change in the ratio of the hazards for a one unit change in the corresponding covariate. A hazard ratio of 1 therefore implies that the covariate has no effect on the risk of failure, while if it is smaller than 1, it implies that the covariate increases the time until the event considered occurs.

In our sample, 133 out of 1,521 groups became inactive and are no longer operating. This represents a gross failure rate of 8.7%. The hazard ratios for the group survival are presented in Table 7. Caste composition is measured in two ways: (i) whether the group is homogenous or not and (ii) whether the group is homogenous

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<sup>11</sup>For inactive groups, we calculated the duration using the date of their last meeting, which was written down in their banking records.

<sup>12</sup>The Weibull model fits well our data. In particular, the estimated coefficients are very close to those obtained with a Cox model.

Table 5: Group characteristics

	Active	Inactive	All
Age of the group (years)	3.6 (2.1)	2.4 (1.8)	3.5 (2.1)
Heterogeneous SHG	59.1 (49.2)	56.4 (49.8)	58.9 (49.2)
Homogenous SHG	40.9 (49.2)	43.6 (49.8)	41.1 (49.2)
Homogenous ST	15.5 (36.2)	27.1 (44.6)	16.5 (37.1)
Homogenous SC	6.3 (24.2)	6.0 (23.9)	6.2 (24.2)
Homogenous OBC/Other	19.1 (39.3)	10.5 (30.8)	18.3 (38.7)
Fraction landless	21.3 (27.5)	24.9 (29.5)	21.6 (27.7)
Mean education (years)	1.9 (1.8)	1.3 (1.4)	1.9 (1.7)
Fraction separated	9.4 (9.5)	12.4 (11.8)	9.6 (9.8)
Mean number of children	2.9 (0.8)	2.9 (0.7)	2.9 (0.8)
Mean age (years)	36.9 (5.4)	37.9 (5.4)	37.0 (5.4)
Number of members	14.5 (3.8)	13.9 (3.7)	14.4 (3.8)
Distance to bank (km)	6.7 (5.6)	8.0 (5.3)	6.8 (5.6)
Other SHGs in village (#)	2.9 (3.0)	2.0 (2.6)	2.8 (2.9)
Observations	1,388	133	1,521

The table reports means. Standard deviations are provided in parentheses.

Table 6: Characteristics of members

	Present	Past	All
ST	35.5 (47.8)	43.9 (49.6)	36.5 (48.1)
SC	16.7 (37.3)	17.8 (38.3)	16.8 (37.4)
OBC/Other	47.9 (50.0)	38.3 (48.6)	46.7 (49.9)
Fraction own caste	78.0 (28.0)	74.2 (29.5)	77.6 (28.2)
ST in homogenous SHG	15.3 (36.0)	16.6 (37.2)	15.5 (36.2)
ST in heterogeneous SHG	20.2 (40.1)	27.3 (44.5)	21.0 (40.7)
SC in homogenous SHG	6.2 (24.1)	5.5 (22.7)	6.1 (24.0)
SC in heterogeneous SHG	10.4 (30.6)	12.3 (32.9)	10.7 (30.9)
OBC/Other in homogenous SHG	20.7 (40.5)	14.5 (35.2)	20.0 (40.0)
OBC/Other in heterogeneous SHG	27.2 (44.5)	23.8 (42.6)	26.7 (44.3)
Landless	19.6 (39.7)	25.2 (43.4)	20.3 (40.2)
Education (years)	1.8 (3.3)	1.6 (3.2)	1.8 (3.3)
Separated	9.7 (29.6)	9.7 (29.6)	9.7 (29.6)
Number of children	3.0 (1.7)	2.7 (1.8)	3.0 (1.7)
Age (years)	37.1 (10.4)	37.1 (11.6)	37.1 (10.5)
Observations	19,299	2,675	21,974

The table reports means. Standard deviations are provided in parentheses.

in each particular caste separately, using heterogenous groups as a baseline. In columns (1) and (3), we control only for the fraction of landless members in the group, while in the other two columns, we also control for the size of the group, the mean characteristics of the members of the group and the following village level variables: the number of other SHGs in the village, the distance to the nearest bank and Pradan team fixed effects.<sup>13</sup>

Table 7: Group Survival (Weibull model)

	(1)	(2)	(3)	(4)
Homogenous SHG	1.44*	1.30		
	(0.29)	(0.28)		
Homogenous ST			1.89***	1.59*
			(0.46)	(0.43)
Homogenous SC			1.35	1.15
			(0.54)	(0.48)
Homogenous OBC/Other			0.92	0.99
			(0.32)	(0.33)
Fraction landless	1.14	0.88	1.19	0.94
	(0.44)	(0.37)	(0.48)	(0.41)
Mean education (years)		0.83**		0.85*
		(0.07)		(0.07)
Fraction separated		3.79		3.99
		(3.72)		(3.93)
Mean number of children		0.90		0.91
		(0.16)		(0.16)
Mean age (years)		0.96*		0.96
		(0.02)		(0.02)
Number of members		0.94**		0.94**
		(0.03)		(0.03)
Distance to bank (km)		1.02		1.02
		(0.01)		(0.01)
Other SHGs in village (#)		0.98		0.98
		(0.04)		(0.04)
Observations	1,521	1,521	1,521	1,521
Number of Failures	133	133	133	133
Team fixed effects	yes	yes	yes	yes

We analyse the time till a group becomes inactive using a Weibull duration model. The reported coefficients are exponentiated, and robust standard errors are given in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>13</sup>We could alternatively have introduced Block fixed effects, which are administrative divisions of about 8 to 10 villages. Our groups are spread over 12 blocks. We preferred the use of team fixed effects which is slightly coarser (6 in total), as they correspond to the particular team each SHG group is involved with. The inclusion of block fixed effects instead leaves the results unchanged.



Columns (1) and (2) indicate that, on average, homogenous groups are more likely to fail, but the estimation is not very precise. In columns (3) and (4), we show that this effect is entirely driven by the homogenous ST groups, for which the probability of group failure is 59% higher than that for heterogenous groups. In other words, for STs, group survival is much more likely if other castes are also present in the group. This is consistent with the gross failure rates observed in the data: homogenous ST groups have a gross failure rate of 14.3%, as compared to 8.4% for heterogenous groups. By contrast, the fraction of landless members does not affect the survival of the group. Larger groups with more educated members are also more likely to survive. An increase in the average level of education by one year reduces the chances of group failure by about 15%.

### 4.3 Member duration in groups

We now investigate the determinants of the duration of members in existing groups. In our sample, out of the 21,974 members surveyed, 2,675 left an existing group, which represents an average departure rate of 12.2%. The hazard ratios from estimating a Weibull model of member's duration in groups are displayed in Table 8. The member and the group characteristics considered parallel those used in the analysis of group duration and include the caste of the member, her level of education, her landownership status, her age, her marital status and the number of children she has. At the group level, we again distinguish between homogenous and heterogenous groups in the first two columns, we include the proportion of members of the same caste in columns (3) and (4) and then investigate homogeneity for each caste separately in the last two columns.<sup>14</sup>

On average, both ST and SC members are more likely to leave groups than members of OBC/Other castes. However, this effect is essentially driven by the presence of other castes in the group. While ST and SC members are more likely (by between 14 and 30%) to leave a heterogeneous group, this is not the case when they belong to a homogenous group. This is confirmed by the positive effect of other members of the same caste in the group on a member's duration. Landless members are probably more likely to leave, but the effect estimated is not stable when additional controls are introduced. Finally, members who are educated, separated and have children stay longer in groups.

The combined results on duration point to a very interesting pattern for STs. When they belong to a group which is socially homogenous, they are much less likely to leave, but the group is more likely to fail. By contrast, being a member of a heterogeneous group increases their chance of departure, but makes group survival more likely. In net, the two effects cancel each other out: on average, a ST mem-

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<sup>14</sup>We also estimated a linear probability model with group fixed effects with results that closely parallel those presented here.

Table 8: Member Survival (Weibull model)

	(1)	(2)	(3)	(4)	(5)	(6)
ST	1.15** (0.08)	1.07 (0.08)	1.16** (0.08)	1.09 (0.08)		
SC	1.24*** (0.10)	1.23** (0.10)	1.22** (0.10)	1.20** (0.10)		
Homogenous SHG	0.90 (0.07)	0.95 (0.07)				
Fraction own caste			0.81* (0.09)	0.82* (0.09)		
ST in homogenous SHG					1.00 (0.11)	0.97 (0.11)
ST in heterogeneous SHG					1.22*** (0.09)	1.14* (0.09)
SC in in homogenous SHG					1.17 (0.18)	1.20 (0.18)
SC in heterogeneous SHG					1.30*** (0.11)	1.29*** (0.11)
OBC/Other in homogenous SHG					1.01 (0.11)	1.07 (0.12)
Landless	1.24*** (0.08)	1.11 (0.08)	1.23*** (0.07)	1.10 (0.08)	1.24*** (0.08)	1.11 (0.08)
Education (years)		0.98*** (0.01)		0.98*** (0.01)		0.98*** (0.01)
Separated		0.88* (0.06)		0.87* (0.06)		0.88* (0.06)
Number of children		0.88*** (0.01)		0.88*** (0.01)		0.88*** (0.01)
Age (years)		1.00 (0.00)		1.00 (0.00)		1.00 (0.00)
Fraction landless		1.21 (0.18)		1.20 (0.18)		1.20 (0.18)
Mean education (years)		0.96 (0.03)		0.96 (0.03)		0.96 (0.03)
Fraction separated		0.92 (0.36)		0.92 (0.36)		0.92 (0.36)
Mean number of children		0.95 (0.06)		0.95 (0.06)		0.95 (0.06)
Mean age (years)		0.99 (0.01)		0.99 (0.01)		0.99 (0.01)
Number of members		1.06*** (0.01)		1.06*** (0.01)		1.06*** (0.01)
Distance to bank (km)		1.00 (0.01)		1.00 (0.01)		1.00 (0.01)
Other SHGs in village (#)		1.04*** (0.01)		1.04*** (0.01)		1.04*** (0.01)
Observations	21,974	21,974	21,974	21,974	21,974	21,974
Number of Failures	2,675	2,675	2,675	2,675	2,675	2,675
Team fixed effects	yes	yes	yes	yes	yes	yes

We analyse the time till a member leaves an existing group using a Weibull duration model. The reported coefficients are exponentiated. Standard errors, clustered at the SHG level, are given in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

ber has 74.2% chances of remaining in an active group if she joins a homogenous group and 74.4% if she joins a heterogeneous one. In Table 9, we summarize the information about selective attrition by caste and homogeneity of the group.

Table 9: Attrition rate by type of caste group

	Number of members	Leaving because of group failure	Leaving existing group	Remains in group
ST in homogenous SHG	3,403	12.7	13.1	74.2
ST in heterogeneous SHG	4,619	9.8	15.8	74.4
SC in homogenous SHG	1,345	7.2	10.9	81.9
SC in heterogeneous SHG	2,345	6.8	14.1	79.1
OBC/Other in homogenous SHG	4,385	3.9	8.8	87.2
OBC/Other in heterogeneous SHG	5,877	5.2	10.8	83.9

## 5 Group and members performance

### 5.1 Group access to bank loans

In this section, we focus on the performance of the groups and their members. A basic measure of performance is the ability of the group and its members to have access to bank loans. Being *linked* to a bank and obtaining a bank loan is indeed the major motive behind the creation of those groups. In the following, we restrict our attention to the 1,388 groups which are active as their performance with respect to bank loans can be more easily compared. Among active groups, 71.5% received at least one bank loan, and the average amount received per year per member is equal to 1,339 INR (which roughly corresponded 20 days of work for a casual worker in agriculture in this region in 2008 (Government of India, 2010)). In the following, we investigate group performance for existing groups using two measures. The first one is the amount of time the group had to wait till it received its first bank loan. Given the censored nature of the data, this indicator actually reflects the probability that a group with a given set of characteristics succeeds in obtaining a loan. We again use the Weibull model of survival analysis, where the first loan is the event considered, using the same set of controls as in the analysis of group duration. The results are given in Table 10.

The results in the first two columns indicate that, on average, socially homogenous groups have to wait a longer time before obtaining their first loan, but the

Table 10: Duration till the first bank loan at the group level (Weibull model)

	(1)	(2)	(3)	(4)
Homogenous SHG	0.86*	0.86*		
	(0.07)	(0.07)		
Homogenous ST			0.73***	0.83*
			(0.08)	(0.10)
Homogenous SC			0.85	0.85
			(0.14)	(0.14)
Homogenous OBC/Other			1.04	0.89
			(0.11)	(0.10)
Fraction landless	1.64***	1.62***	1.62***	1.62***
	(0.27)	(0.27)	(0.27)	(0.27)
Mean education (years)		1.10***		1.10***
		(0.03)		(0.03)
Fraction separated		0.90		0.89
		(0.35)		(0.34)
Mean number of children		1.06		1.06
		(0.07)		(0.07)
Mean age (years)		1.00		1.00
		(0.01)		(0.01)
Number of members		0.99		0.99
		(0.01)		(0.01)
Distance to bank (km)		0.97***		0.97***
		(0.01)		(0.01)
Other SHGs in village (#)		1.01		1.01
		(0.01)		(0.01)
Observations	1,388	1,388	1,388	1,388
Number of linked groups	992	992	992	992
Team fixed effects	yes	yes	yes	yes

We analyse the time till an active group obtains a first bank loan using a Weibull duration model. The reported coefficients are exponentiated, and robust standard errors are given in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

effect is again driven by the STs, which are 17% less likely to receive a bank loan over a given period (column (4)). STs perform better when they are heterogeneous and mixed with members of higher castes. The participation of landless members in the group increases the likelihood of obtaining a loan. Therefore, groups with more landless members are able to link to a bank more rapidly, which is related to the fact that these groups may plan to develop new occupations through their access to bank loans.<sup>15</sup> We again find that members' education significantly improves the performance of the group: a one year increase in the average member education increases the probability to obtain a loan by 10%.

The second measure of performance is the amount of bank loans received by the group per year of activity. There, we use a Tobit estimator given the censored nature of our data. The results are given in Table 11. The caste composition of the group is again a major factor behind its performance. Homogenous groups tend to obtain lower loan amounts per member per year, but this effect is essentially due to the bad performance of homogenous ST groups, which on average receive 450 INR less than when they also comprise members of other castes. While the presence of landless members increases the likelihood of getting a bank loan, they have no influence on the amount obtained per year which implies that, on average, they have access to smaller loans.

## 5.2 Members' access to bank loans

In the following, we focus on groups that have received at least one bank loan, and investigate how these bank loans are distributed across members.<sup>16</sup> We focus on three measures: an indicator variable measuring whether the member received a positive amount of the loan or not, the share a member obtains in all the bank loans taken by the group and finally the amount she obtained per year. In all estimations, we use a group fixed effect, so that we effectively measure, within the group, how the loan is distributed across its members as a function of their characteristics. We use ordinary least squares in all the regressions. For the indicator variable, we do this because we use a group fixed effect, for the analysis of the shares and the amounts obtained, we do this because a share of zero really means that the member received nothing, so that our data is not effectively censored.

The results, which are given in Table 12, are very consistent across all measures. First, nor the caste of the member, nor her land status matter for her access to bank loans within the group. (Note that, given the group fixed effect, the impact of caste is identified in heterogenous groups only.) Once a group obtains a loan, its distribution

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<sup>15</sup>Indeed, they get involved in forest activities such as lac cultivation, and rearing silkworms to produce cocoons. They also process cocoons to make yarn and fabric.

<sup>16</sup>The members considered in the regressions belonged to the group at the moment of the first bank loan, so members who left after the first bank loan are included.

Table 11: Amount of bank loans the group received per member per year of activity (Tobit model)

	(1)	(2)	(3)	(4)
Homogenous SHG	-234.2** (104.5)	-256.1** (105.4)		
Homogenous ST			-462.3*** (146.9)	-453.0*** (155.0)
Homogenous SC			-140.3 (217.3)	-234.8 (207.2)
Homogenous OBC/Other			-56.0 (137.8)	-87.2 (138.8)
Fraction landless	88.6 (195.6)	216.4 (201.4)	59.8 (197.1)	195.0 (202.8)
Mean education (years)		97.5*** (32.3)		75.5** (33.3)
Fraction separated		-151.0 (566.9)		-176.3 (569.2)
Mean number of children		169.7* (90.7)		164.4* (90.2)
Mean age (years)		19.3* (11.3)		17.7 (11.3)
Number of members		-41.8*** (15.2)		-41.7*** (15.3)
Distance to bank (km)		-15.7* (8.8)		-14.5* (8.7)
Other SHGs in village (#)		-36.1* (19.4)		-37.2* (19.5)
Age of the group (years)		169.7*** (26.6)		170.9*** (26.7)
Observations	1,388	1,388	1,388	1,388

Robust standard errors are given in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 12: Member's access to bank loans

	Received part of a bank loan or not (1)	Share of the total bank loans of the group (2)	Amount received of the total bank loans per year of the group
ST	0.0102 (0.0095)	-0.0020 (0.0023)	-69.2 (68.2)
SC	0.0072 (0.0133)	-0.0016 (0.0038)	-80.2 (73.8)
Landless	-0.0072 (0.0087)	0.0002 (0.0026)	-9.2 (51.6)
Education (years)	0.0044*** (0.0011)	0.0037*** (0.0004)	71.5*** (9.3)
Separated	-0.0381*** (0.0096)	-0.0117*** (0.0025)	-183.4*** (38.7)
Number of children	0.0078*** (0.0019)	0.0019*** (0.0006)	47.9*** (11.1)
Age (years)	0.0007* (0.0004)	0.0003*** (0.0001)	4.9*** (1.6)
Constant	0.7377*** (0.0155)	0.0548*** (0.0044)	938.0*** (83.2)
Observations	11,767	11,767	11,767
Group fixed effects	yes	yes	yes

Robust standard errors are given in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

is essentially uniform along those dimensions. By contrast, more educated members receive a larger fraction of the bank loans, and the effect is potentially important, as 5 more years of education (which corresponds to the completion of primary school), increases the share of the member by 1.9 percentage points (which corresponds to a 27% increase in a member's average share), and the amount received per year by about 358 Rs. Separated women tend to receive much less than the other members of the group.

## 6 Concluding comments

In this paper, we provided a descriptive analysis of the performance of microfinance groups, known as Self-Help Groups, based on an original census we carried out in a poor area of Northern India. Given the pro-poor orientation of the program, the main question explored in this paper was whether traditionally disadvantaged groups, such as lower castes villagers and landless farmers, were less likely to have

access to the groups and their benefits. This question is all the more important as SHGs are an essential part of anti-poverty programs in India. For example, the National Rural Livelihood Mission puts forward the creation of groups as a first step in its poverty alleviation policies.

The coverage of the program across villages is extensive, as about 38% of the households in the village have at least one member participating in a group. Within villages, we did not find evidence of a bias in membership based on caste identity. However, we find that the groups are much more socially homogenous than the villages where they are created, suggesting a process of fragmentation of groups within villages based on caste identity. In terms of landownership, membership strongly favors landless villagers, who are twice as likely to enter a group than other villagers.

We showed that exclusionary processes against lower castes are mostly operating through selective attrition both at the group and at the member level. In particular, scheduled tribe villagers are much more likely to belong to groups which fail and disappear: the probability of group failure for a scheduled tribe is twice as large as for a member of another caste. Moreover, their probability of leaving the group is also substantially larger. The survival analysis carried out at the level of the groups and at the level of the members highlighted an interesting trade-off in the process. While, at the group level, having members of other castes in the group significantly increase the chances of survival of the group, at the individual level, it increases the chances of departure by low caste members. On average, groups composed of landless members are probably more likely to fail, and landless members are also more likely to leave the group compared to other landownership categories. Their initial advantage in terms of participation gets therefore partially eroded in the process.

We also analyzed the performance of groups and members in terms of access to bank loans, which is the major objective of these groups. We again find that lower castes groups, and particularly scheduled tribes, perform much better when they are heterogeneous. In terms of landownership, the proportion of landless members increases the likelihood of obtaining a bank loan, but the amounts obtained are also smaller. At the member level, however, bank loans are allocated uniformly within the group. This suggests that, once a villager remains a member of a group, and given the performance of the group, caste identity and landownership do not play a role in benefiting from group activities.

These findings are summarized in Table 13, where we report the amount of bank loans that a given villager can expect every year, by caste and landownership category.<sup>17</sup> In expected terms, scheduled tribe members have access to lower loans

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<sup>17</sup>The numbers displayed in the table are simple averages, and therefore ignore the temporal aspect of the process whereby groups in the early times of their creation have to wait several months before qualifying for a linkage. Given the interval of time used for the observations, the amount of the bank loans received are therefore under-estimated.



than members of other castes. However, group heterogeneity improve access to bank loans for members of all castes. In particular, it increases the amount of bank loans obtained by scheduled tribe members by 20%. By contrast, landless members are systematically better off than members who own land.

Table 13: Expected amount of bank loans per year per caste and land category

	Number of observations	Probability of remaining till group received bank loan or till day of survey	Expected amount of bank loans received per year	Significance of the difference relative to the baseline category
	(1)	(2)	(3)	(4)
ST	8,022	80.5 (39.7)	672.2 (1436.4)	N.A.
SC	3,690	86.8 (33.9)	765.3 (1496.8)	93.1*** (29.0)
OBC/Other	10,262	91.3 (28.2)	817.5 (1794.4)	145.3*** (24.5)
ST in homogenous SHG	3,403	79.8 (40.2)	600.1 (1296.1)	N.A.
ST in heterogeneous SHG	4,619	81.0 (39.3)	725.3 (1529.5)	125.2*** (32.4)
SC in homogenous SHG	1,345	88.2 (32.3)	694.2 (1414.7)	N.A.
SC in heterogeneous SHG	2,345	86.0 (34.7)	806.2 (1540.8)	112.0** (51.2)
OBC/Other in homogenous SHG	4,385	92.8 (25.9)	737.6 (1842.9)	N.A.
OBC/Other in heterogeneous SHG	5,877	90.2 (29.7)	877.1 (1755.2)	139.5*** (35.8)
Landless	4,464	84.2 (36.5)	793.0 (1467.6)	N.A.
Owns land	17,510	87.2 (33.4)	746.2 (1661.4)	-46.8* (27.2)

The analysis also highlighted the major role played by education in the performance of the groups and its members. An increase in the average education of the members by one year reduces the probability of group failure by about 15%, and increases its chances of obtaining a bank loan by 10%. For a particular member, completing the 5 years of primary education as compared to no education increases

her chances of remaining in the group by 10%, and her share in the bank loans obtained by the group by 1.9 percentage point (which represents a 27% increase compared to a member with no education). Education thus plays a pivotal role in terms of the survival of the group and its members, as well as in the benefits generated by the group.

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